Inclusive Design and Chronic Pain: Designing Technology to Support Self-Management

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Background

Core to the long-term management of chronic pain is the need to empower patients to engage in home based rehabilitation and self-management. Telehealth systems that support behaviour change offer a solution to this problem by replacing, augmenting or enhancing elements traditionally provided by health care professionals. We describe the development of a personalised self-management system (SMART2) for patients with chronic pain.

An inclusive design approach was used to establish which features of behaviour change interventions are best suited to remote computer assisted delivery. This approach integrates the user within the design process to maximise both the amount of behaviour change and the proportion of users that can be supported by the system.

Another key goal for the development process was to provide a theoretical account of the self-management of chronic pain using technology. To this end we shall conduct a Realistic Evaluation (Pawson & Tilley, 1997) of the SMART2 system.

Method

Twelve healthcare professionals involved in pain management took part in focus groups designed to identify therapeutic objectives for the system and therapeutic strategies that could be implemented within the system. Eight chronic pain patients took part in focus groups and/or home visits designed to specify technological requirements and understand the impact of chronic pain upon everyday life.

Results from the focus groups were used to develop the therapeutic components within the SMART2 system and to construct Context-Mechanism-Outcome (CMO) configurations for the Realistic Evaluation. Another separate focus group was then conducted with a separate group of six healthcare professionals involved in pain management. The SMART2 system and the CMO configurations were presented to this focus group for further feedback.

All focus groups and interviews were semi-structured and audio or video recorded.

Results

Both the SMART2 system and the CMO configurations have been developed. SMART2 consists of a touchscreen computer and mobile device and has a number of key features. 1. It is a goal based system that is flexible and allows patients to identify goals which promote independent living. 2. It is a reinforcement based system that presents accurate data on task achievements reinforcing goal

related behaviour. 3. It is an expert system that gives specific advice tailored to account for barriers to change identified in individual psychological assessments. 4. It makes use of local environments by situating goals and reinforcements within the real lives of patients. 5. It makes use of technological features not normally available to therapists, in particular remote sensing, collation of multiple data sources, remote messaging. The system is designed to enable people to remove pain as a major determinant in their everyday decision making.

Conclusion

The SMART2 system has integrated the results from focus groups with healthcare professionals and chronic pain patients to target the most important and achievable therapeutic goals. A four week trial of the SMART2 system in patients' homes is now underway. The findings from this Realistic Evaluation will inform future iterations of the SMART2 system. Within this evaluation the CMO configurations will be used to develop theory of self-management of chronic pain. This will address the questions: what works, for whom, how and in what circumstances.